

FIGURE 1

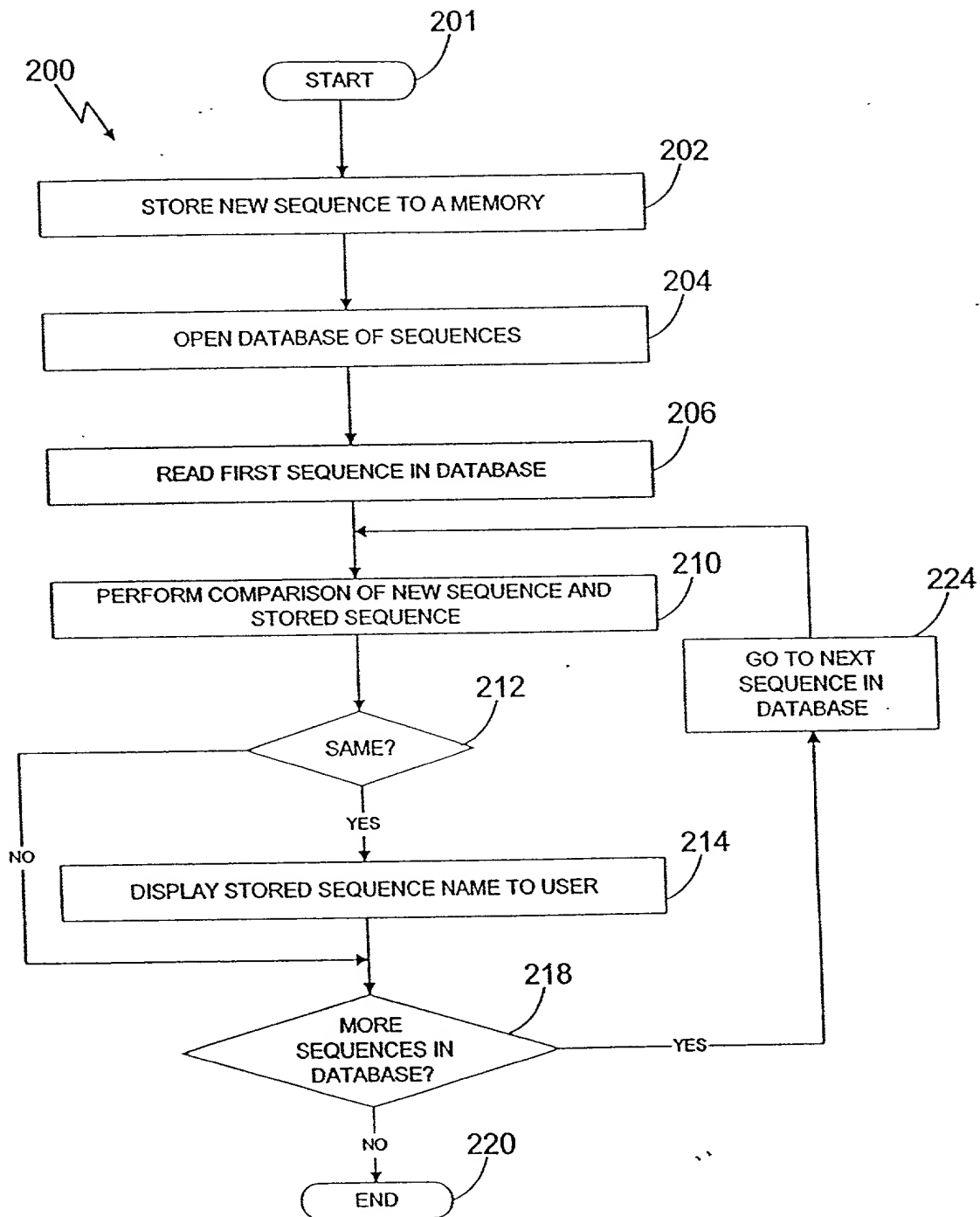


FIGURE 2

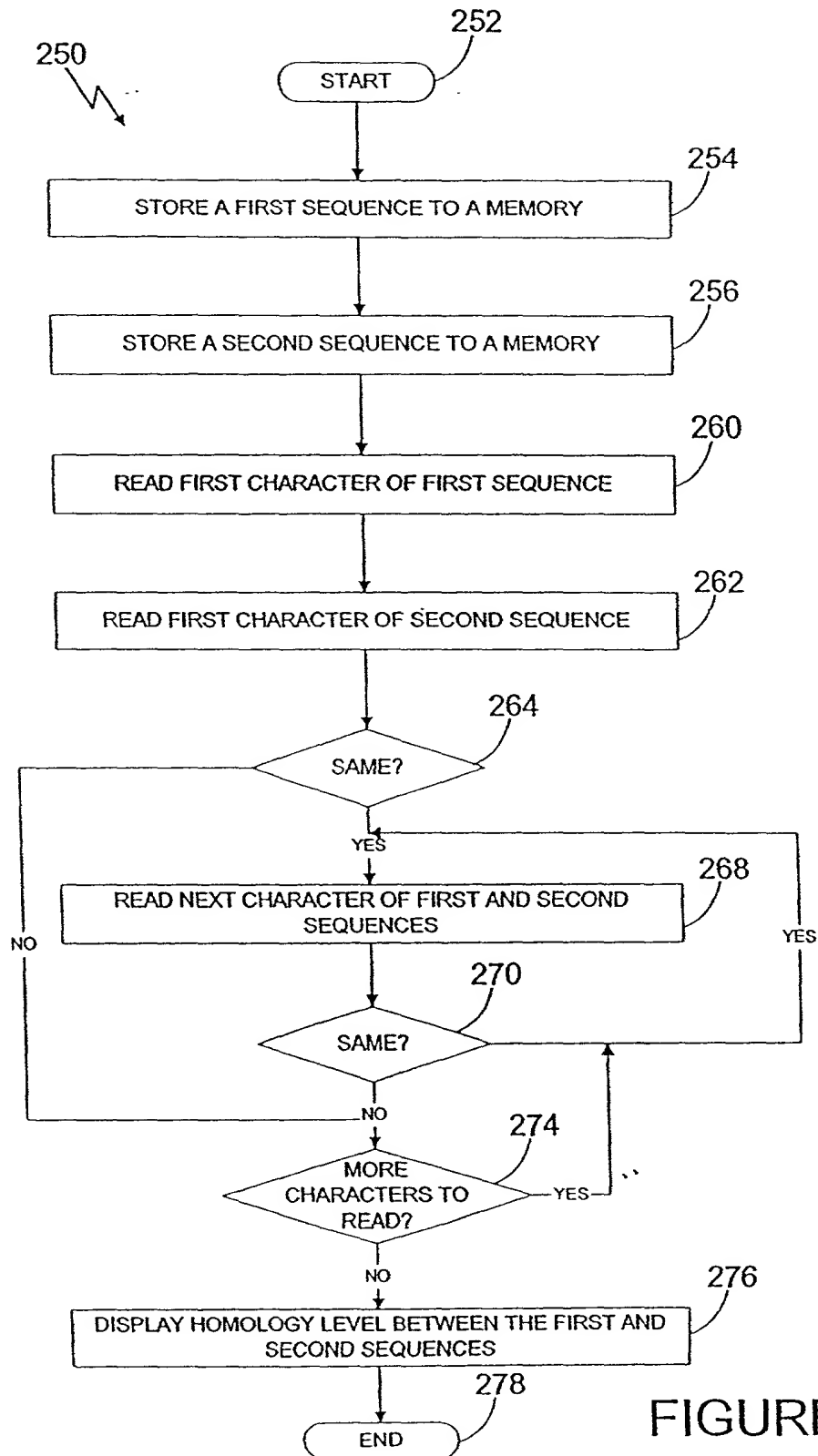


FIGURE 3

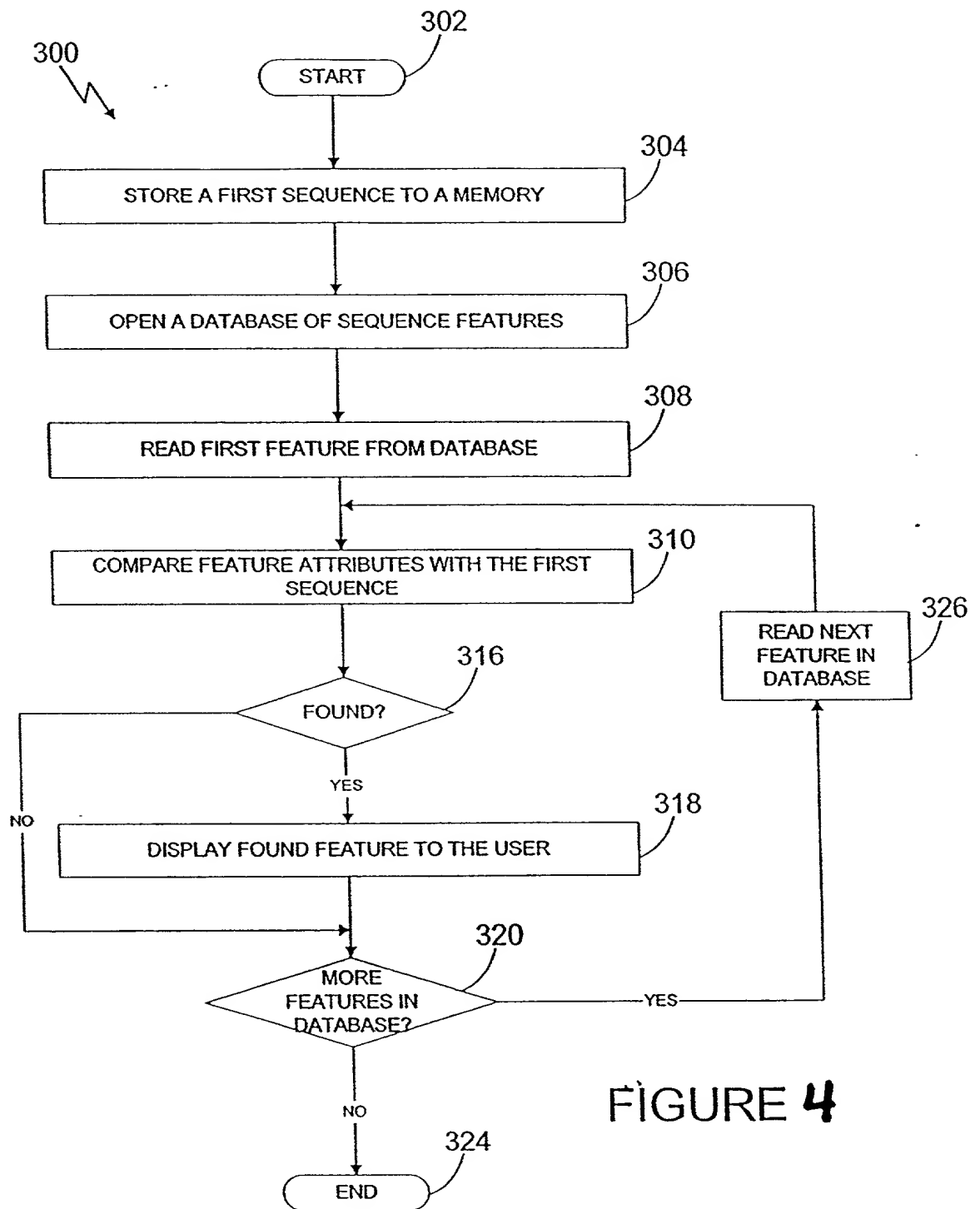


FIGURE 4

FIGURE 5

ATG ATT GAA GAC CCT ATG GAC TGG GCT TTT CCG AGG ATA AAG AGA CTG Met Ile Glu Asp Pro Met Asp Trp Ala Phe Pro Arg Ile Lys Arg Leu	48
5 10 15	
CCT CAG TAT GTC TTC TCT CTC GTT AAC GAA CTC AAG TAC AAG CTA AGG Pro Gln Tyr Val Phe Ser Leu Val Asn Glu Leu Lys Tyr Lys Leu Arg	96
20 25 30	
CGT GAA GGC GAA GAT GTA GTG GAT CTT GGT ATG GGC AAT CCT AAC ATG Arg Glu Gly Glu Asp Val Val Asp Leu Gly Met Gly Asn Pro Asn Met	144
35 40 45	
CCT CCA GCA AAG CAC ATA ATA GAT AAA CTC TGC GAA GTG GCT CAA AAG Pro Pro Ala Lys His Ile Ile Asp Lys Leu Cys Glu Val Ala Gln Lys	192
50 55 60	
CCG AAC GTT CAC GGA TAT TCT GCG TCA AGG GGC ATA CCA AGA CTG AGA Pro Asn Val His Gly Tyr Ser Ala Ser Arg Gly Ile Pro Arg Leu Arg	240
65 70 75 80	
AAG GCT ATA TGT AAC TTC TAC GAA GAA AGG TAC GGA GTG AAA CTC GAC Lys Ala Ile Cys Asn Phe Tyr Glu Glu Arg Tyr Gly Val Lys Leu Asp	288
85 90 95	
CCT GAG AGG GAG GCT ATA CTA ACA ATC GGT GCA AAG GAA GGG TAT TCT Pro Glu Arg Glu Ala Ile Leu Thr Ile Gly Ala Lys Glu Gly Tyr Ser	336
100 105 110	
CAT TTG ATG CTT GCG ATG ATA TCT CCG GGT GAT ACG GTA ATA GTT CCT His Leu Met Leu Ala Met Ile Ser Pro Gly Asp Thr Val Ile Val Pro	384
115 120 125	
AAT CCC ACC TAT CCT ATT CAC TAT TAC GCT CCC ATA ATT GCA GGA GGG Asn Pro Thr Tyr Pro Ile His Tyr Tyr Ala Pro Ile Ile Ala Gly Gly	432
130 135 140	
GAA GTT CAC TCA ATA CCC CTT AAC TTC TCG GAC GAT CAA GAT CAT CAG Glu Val His Ser Ile Pro Leu Asn Phe Ser Asp Asp Gln Asp His Gln	480
145 150 155 160	
GAA GAG TTT TTA AGG AGG CTT TAC GAG ATA GTA AAA ACC GCG ATG CCA Glu Glu Phe Leu Arg Arg Leu Tyr Glu Ile Val Lys Thr Ala Met Pro	528
165 170 175	
AAA CCC AAG GCT GTC GTC ATA AGC TTT CCT CAC AAT CCA ACG ACC ATA Lys Pro Lys Ala Val Val Ile Ser Phe Pro His Asn Pro Thr Thr Ile	576
180 185 190	
ACG GTA GAA AAG GAC TTT TTT AAA GAA ATA GTT AAG TTT GCA AAG GAA Thr Val Glu Lys Asp Phe Phe Lys Glu Ile Val Lys Phe Ala Lys Glu	624
195 200 205	
CAC GGT CTC TGG ATA ATA CAC GAT TTT GCG TAT GCG GAT ATA GCC TTT His Gly Leu Trp Ile Ile His Asp Phe Ala Tyr Ala Asp Ile Ala Phe	672
210 215 220	
GAC GGT TAC AAG CCC CCC TCA ATA CTC GAA ATA GAA GGT GCT AAA GAC Asp Gly Tyr Lys Pro Pro Ser Ile Leu Glu Ile Glu Gly Ala Lys Asp	720
225 230 235 240	
GTT GCG GTT GAG CTC TAC TCC ATG TCA AAG GGC TTT TCA ATG GCG GGC Val Ala Val Glu Leu Tyr Ser Met Ser Lys Gly Phe Ser Met Ala Gly	768

245										250					255					
TGG	AGG	GTA	GCC	TTT	GTC	GTT	GGA	AAC	GAA	ATA	CTC	ATA	AAA	AAC	CTT	816				
Trp	Arg	Val	Ala	Phe	Val	Val	Gly	Asn	Glu	Ile	Leu	Ile	Lys	Asn	Leu					
			260					265						270						
GCA	CAC	CTC	AAA	AGC	TAC	TTG	GAT	TAC	GGT	ATA	TTT	ACT	CCC	ATA	CAG	864				
Ala	His	Leu	Lys	Ser	Tyr	Leu	Asp	Tyr	Gly	Ile	Phe	Thr	Pro	Ile	Gln					
		275					280					285								
GTG	GCC	TCT	ATT	ATC	GCA	TTA	GAG	AGC	CCC	TAC	GAA	ATC	GTG	GAA	AAA	912				
Val	Ala	Ser	Ile	Ile	Ala	Leu	Glu	Ser	Pro	Tyr	Glu	Ile	Val	Glu	Lys					
	290					295					300									
ACC	GCA	AAG	GTT	TAC	CAA	AAA	AGA	AGA	GAC	GTT	CTG	GTG	GAA	GGG	TTA	960				
Thr	Ala	Lys	Val	Tyr	Gln	Lys	Arg	Arg	Asp	Val	Leu	Val	Glu	Gly	Leu					
305					310					315					320					
AAC	AGG	CTC	GGC	TGG	AAA	GTA	AAA	AAA	CCT	AAG	GCT	ACC	ATG	TTC	GTC	1008				
Asn	Arg	Leu	Gly	Trp	Lys	Val	Lys	Lys	Pro	Lys	Ala	Thr	Met	Phe	Val					
			325						330					335						
TGG	GCA	AAG	ATT	CCC	GAA	TGG	ATA	AAT	ATG	AAC	TCT	CTG	GAC	TTT	TCC	1056				
Trp	Ala	Lys	Ile	Pro	Glu	Trp	Ile	Asn	Met	Asn	Ser	Leu	Asp	Phe	Ser					
		340						345					350							
TTG	TTC	CTC	CTA	AAA	GAG	GCG	AAG	GTT	GCG	GTA	TCC	CCG	GGT	GTG	GGC	1104				
Leu	Phe	Leu	Leu	Lys	Glu	Ala	Lys	Val	Ala	Val	Ser	Pro	Gly	Val	Gly					
		355					360					365								
TTT	GGT	CAG	TAC	GGA	GAG	GGG	TAC	GTA	AGG	TTT	GCA	CTT	GTA	GAA	AAT	1152				
Phe	Gly	Gln	Tyr	Gly	Glu	Gly	Tyr	Val	Arg	Phe	Ala	Leu	Val	Glu	Asn					
	370					375					380									
GAA	CAC	AGG	ATC	AGA	CAG	GCT	ATA	AGG	GGA	ATA	AGG	AAA	GCC	TTC	AGA	1200				
Glu	His	Arg	Ile	Arg	Gln	Ala	Ile	Arg	Gly	Ile	Arg	Lys	Ala	Phe	Arg					
385					390					395					400					
AAA	CTC	CAG	AAG	GAG	AGG	AAA	CTT	GAA	CCT	GAG	AGA	AGT	GCT	TAA		1245				
Lys	Leu	Gln	Lys	Glu	Arg	Lys	Leu	Glu	Pro	Glu	Arg	Ser	Ala	End						
			405						410				414							

FIGURE 6

ATG GAC AGG CTT GAA AAA GTA TCA CCC TTC ATA GTA ATG GAT ATC CTA Met Asp Arg Leu Glu Lys Val Ser Pro Phe Ile Val Met Asp Ile Leu	48
5 10 15	
GCT CAG GCC CAG AAG TAC GAA GAC GTA GTA CAC ATG GAG ATA GGA GAG Ala Gln Ala Gln Lys Tyr Glu Asp Val Val His Met Glu Ile Gly Glu	96
20 25 30	
CCC GAT TTA GAA CCG TCT CCC AAG GTA ATG GAA GCT CTG GAA CGT GCG Pro Asp Leu Glu Pro Ser Pro Lys Val Met Glu Ala Leu Glu Arg Ala	144
35 40 45	
GTG AAG GAA AAG ACG TTC TTC TAC ACC CCT GCT CTG GGA CTC TGG GAA Val Lys Glu Lys Thr Phe Phe Tyr Thr Pro Ala Leu Gly Leu Trp Glu	192
50 55 60	
CTC AGG GAA AGG ATA TCG GAG TTT TAC AGG AAA AAG TAC AGC GTT GAA Leu Arg Glu Arg Ile Ser Glu Phe Tyr Arg Lys Lys Tyr Ser Val Glu	240
65 70 75 80	
GTT TCT CCA GAG AGA GTC ATC GTA ACT ACC GGA ACT TCG GGA GCG TTT Val Ser Pro Glu Arg Val Ile Val Thr Thr Gly Thr Ser Gly Ala Phe	288
85 90 95	
CTC GTA GCC TAC GCC GTA ACA CTA AAT GCG GGA GAG AAG ATA ATC CTC Leu Val Ala Tyr Ala Val Thr Leu Asn Ala Gly Glu Lys Ile Ile Leu	336
100 105 110	
CCA GAC CCC TCT TAC CCC TGT TAC AAA AAC TTT GCC TAC CTC TTA GAC Pro Asp Pro Ser Tyr Pro Cys Tyr Lys Asn Phe Ala Tyr Leu Leu Asp	384
115 120 125	
GCT CAG CCG GTT TTC GTA AAC GTT GAC AAG GAA ACG AAT TAC GAA GTA Ala Gln Pro Val Phe Val Asn Val Asp Lys Glu Thr Asn Tyr Glu Val	432
130 135 140	
AGG AAA GAG ATG ATA GAA GAC ATT GAT GCG AAA GCC CTT CAC ATT TCC Arg Lys Glu Met Ile Glu Asp Ile Asp Ala Lys Ala Leu His Ile Ser	480
145 150 155 160	
TCG CCT CAA AAC CCT ACG GGC ACA CTC TAC TCA CCT GAA ACC CTG AAG Ser Pro Gln Asn Pro Thr Gly Thr Leu Tyr Ser Pro Glu Thr Leu Lys	528
165 170 175	
GAA CTT GCG GAG TAC TGC GAA GAG AAG GGT ATG TAC TTC ATA TCC GAC Glu Leu Ala Glu Tyr Cys Glu Glu Lys Gly Met Tyr Phe Ile Ser Asp	576
180 185 190	
GAG ATT TAC CAC GGA CTC GTT TAC GAA GGT AGG GAG CAC ACA GCA CTT Glu Ile Tyr His Gly Leu Val Tyr Glu Gly Arg Glu His Thr Ala Leu	624
195 200 205	
GAG TTC TCT GAC AGG GCT ATT GTC ATA AAC GGG TTT TCT AAG TAC TTC Glu Phe Ser Asp Arg Ala Ile Val Ile Asn Gly Phe Ser Lys Tyr Phe	672
210 215 220	
TGT ATG CCA GGT TTC AGG ATA GGG TGG ATG ATA GTT CCG GAA GAA CTC Cys Met Pro Gly Phe Arg Ile Gly Trp Met Ile Val Pro Glu Glu Leu	720
225 230 235 240	
GTG AGA AAG GCG GAA ATA GTA ATT CAG AAC GTA TTT ATA TCT GCC CCG Val Arg Lys Ala Glu Ile Val Ile Gln Asn Val Phe Ile Ser Ala Pro	768
245 250 255	

[illegible]

FIGURE 7

ATG TGG GAA TTA GAC CCT AAA ACG CTC GAA AAG TGG GAC AAG GAG TAC	48
Met Trp Glu Leu Asp 5 Pro Lys Thr Leu Glu Lys 10 Trp Asp Lys 15 Glu Tyr	
TTC TGG CAT CCA TTT ACC CAG ATG AAA GTC TAC AGA GAA GAA GAA AAC	96
Phe Trp His Pro Phe Thr Gln Met Lys Val Tyr Arg Glu Glu Glu Asn	
20 25 30	
CTG ATA TTT GAA CGC GGA GAA GGC GTT TAC CTG TGG GAC ATA TAC GGC	144
Leu Ile Phe Glu Arg Gly Glu Gly Val Tyr Leu Trp Asp Ile Tyr Gly	
35 40 45	
AGG AAG TAT ATA GAT GCC ATA TCT TCC CTC TGG TGC AAC GTC CAC GGA	192
Arg Lys Tyr Ile Asp Ala Ile Ser Ser Leu Trp Cys Asn Val His Gly	
50 55 60	
CAT AAC CAC CCT AAA CTG AAC AAC GCA GTT ATG AAA CAG CTC TGT AAG	240
His Asn His Pro Lys Leu Asn Asn Ala Val Met Lys Lys Gln Leu Cys Lys	
65 70 75 80	
GTA GCT CAC ACA ACT ACT CTG GGA AGT TCC AAC GTT CCC GCC ATA CTC	288
Val Ala His Thr Thr Leu Gly Ser Ser Asn Val Pro Ala Ile Leu	
85 90 95	
CTT GCA AAG AAG CTT GTA GAA ATT TCT CCT GAA GGA TTA AAC AAG GTC	336
Leu Ala Lys Lys Leu Val Glu Ile Ser Pro Glu Gly Leu Asn Lys Val	
100 105 110	
TTT TAC TCC GAA GAC GGT GCG GAA GCA GTA GAG ATA GCG ATA AAG ATG	384
Phe Tyr Ser Glu Asp Gly Ala Glu Ala Val Glu Ile Ala Ile Lys Met	
115 120 125	
GCT TAT CAC TAC TGG AAG AAC AAG GGA GTT AAA GGG AAA AAC GTT TTC	432
Ala Tyr His Tyr Trp Lys Asn Lys Gly Val Lys Gly Lys Asn Val Phe	
130 135 140	
ATA ACG CTT TCC GAA GCC TAC CAC GGG GAT ACT GTA GGA GCG GTT AGC	480
Ile Thr Leu Ser Glu Ala Tyr His Gly Asp Thr Val Gly Ala Val Ser	
145 150 155 160	
GTA GGG GGT ATA GAA CTC TTC CAC GGA ACT TAT AAA GAT CTC CTT TTC	528
Val Gly Gly Ile Glu Leu Phe His Gly Thr Tyr Lys Asp Leu Leu Phe	
165 170 175	
AAG ACT ATA AAA CTC CCA TCT CCT TAC CTG TAC TGC AAG GAA AAG TAC	576
Lys Thr Ile Lys Leu Pro Ser Pro Tyr Leu Tyr Cys Lys Glu Lys Tyr	
180 185 190	
GGG GAA CTC TGC CCT GAG TGC ACG GCA GAT TTA TTA AAA CAA CTG GAA	624
Gly Glu Leu Cys Pro Glu Cys Thr Ala Asp Leu Leu Lys Gln Leu Glu	
195 200 205	
GAT ATC CTG AAG TCG CGG GAA GAT ATC GTT GCG GTC ATT ATG GAA GCG	672
Asp Ile Leu Lys Ser Arg Glu Asp Ile Val Ala Val Ile Met Glu Ala	
210 215 220	
GGA ATT CAG GCA GCC GCG GGA ATG CTC CCC TTC CCT CCG GGA TTT TTG	720
Gly Ile Gln Ala Ala Ala Gly Met Leu Pro Phe Pro Pro Gly Phe Leu	
225 230 235 240	
AAA GGC GTA AGG GAG CTT ACG AAG AAA TAC GAC ACT TTA ATG ATA GTT	768
Lys Gly Val Arg Glu Leu Thr Lys Lys Tyr Asp Thr Leu Met Ile Val	
245 250 255	

[illegible]

FIGURE 8

ATG	ACA	TAC	TTA	ATG	AAC	AAT	TAC	GCA	AGG	TTG	CCC	GTA	AAG	TTT	GTA	48
Met	Thr	Tyr	Leu	Met	Asn	Asn	Tyr	Ala	Arg	Leu	Pro	Val	Lys	Phe	Val	
				5					10					15		
AGG	GGA	AAA	GGT	GTT	TAC	CTG	TAC	GAT	GAG	GAA	GGA	AAG	GAG	TAT	CTT	96
Arg	Gly	Lys	Gly	Val	Tyr	Leu	Tyr	Asp	Glu	Glu	Gly	Lys	Glu	Tyr	Leu	
			20					25					30			
GAC	TTT	GTC	TCC	GGT	ATA	GGC	GTC	AAC	TCC	CTC	GGT	CAC	GCT	TAC	CCA	144
Asp	Phe	Val	Ser	Gly	Ile	Gly	Val	Asn	Ser	Leu	Gly	His	Ala	Tyr	Pro	
		35					40					45				
AAA	CTC	ACA	GAA	GCT	CTA	AAA	GAA	CAG	GTT	GAG	AAA	CTC	CTC	CAC	GTT	192
Lys	Leu	Thr	Glu	Ala	Leu	Lys	Glu	Gln	Val	Glu	Lys	Leu	Leu	His	Val	
	50					55					60					
TCA	AAT	CTT	TAC	GAA	AAC	CCG	TGG	CAG	GAA	GAA	CTG	GCT	CAC	AAA	CTT	240
Ser	Asn	Leu	Tyr	Glu	Asn	Pro	Trp	Gln	Glu	Glu	Leu	Ala	His	Lys	Leu	
	65				70				75					80		
GTA	AAA	CAC	TTC	TGG	ACA	GAA	GGG	AAG	GTA	TTT	TTC	GCA	AAC	AGC	GGA	288
Val	Lys	His	Phe	Trp	Thr	Glu	Gly	Lys	Val	Phe	Phe	Ala	Asn	Ser	Gly	
				85					90					95		
ACG	GAA	AGT	GTA	GAG	GCG	GCT	ATA	AAG	CTC	GCA	AGG	AAG	TAC	TGG	AGG	336
Thr	Glu	Ser	Val	Glu	Ala	Ala	Ile	Lys	Leu	Ala	Arg	Lys	Tyr	Trp	Arg	
			100					105					110			
GAT	AAA	GGA	AAG	AAC	AAG	TGG	AAG	TTT	ATA	TCC	TTT	GAA	AAC	TCT	TTC	384
Asp	Lys	Gly	Lys	Asn	Lys	Trp	Lys	Phe	Ile	Ser	Phe	Glu	Asn	Ser	Phe	
		115					120					125				
CAC	GGG	AGA	ACC	TAC	GGT	AGC	CTC	TCC	GCA	ACG	GGA	CAG	CCA	AAG	TTC	432
His	Gly	Arg	Thr	Tyr	Gly	Ser	Leu	Ser	Ala	Thr	Gly	Gln	Pro	Lys	Phe	
	130					135					140					
CAC	AAA	GGC	TTT	GAA	CCT	CTA	GTT	CCT	GGA	TTT	TCT	TAC	GCA	AAG	CTG	480
His	Lys	Gly	Phe	Glu	Pro	Leu	Val	Pro	Gly	Phe	Ser	Tyr	Ala	Lys	Leu	
	145				150				155						160	
AAC	GAT	ATA	GAC	AGC	GTT	TAC	AAA	CTC	CTA	GAC	GAG	GAA	ACC	GCG	GGG	528
Asn	Asp	Ile	Asp	Ser	Val	Tyr	Lys	Leu	Leu	Asp	Glu	Glu	Thr	Ala	Gly	
				165					170					175		
ATA	ATT	ATT	GAA	GTT	ATA	CAA	GGA	GAG	GGC	GGA	GTA	AAC	GAG	GCG	AGT	576
Ile	Ile	Ile	Glu	Val	Ile	Gln	Gly	Glu	Gly	Gly	Val	Asn	Glu	Ala	Ser	
			180					185					190			
GAG	GAT	TTT	CTA	AGT	AAA	CTC	CAG	GAA	ATT	TGT	AAA	GAA	AAA	GAT	GTG	624
Glu	Asp	Phe	Leu	Ser	Lys	Leu	Gln	Glu	Ile	Cys	Lys	Glu	Lys	Asp	Val	
		195					200					205				
CTC	TTA	ATT	ATA	GAC	GAA	GTG	CAA	ACG	GGA	ATA	GGA	AGG	ACC	GGG	GAA	672
Leu	Leu	Ile	Ile	Asp	Glu	Val	Gln	Thr	Gly	Ile	Gly	Arg	Thr	Gly	Glu	
	210					215					220					
TTC	TAC	GCA	TAT	CAA	CAC	TTC	AAT	CTA	AAA	CCG	GAC	GTA	ATT	GCG	CTT	720
Phe	Tyr	Ala	Tyr	Gln	His	Phe	Asn	Leu	Lys	Pro	Asp	Val	Ile	Ala	Leu	
	225				230					235					240	
GCG	AAG	GGA	CTC	GGA	GGA	GGT	GTG	CCA	ATA	GGT	GCC	ATC	CTT	GCA	AGG	768
Ala	Lys	Gly	Leu	Gly	Gly	Gly	Val	Pro	Ile	Gly	Ala	Ile	Leu	Ala	Arg	

				245				250				255							
GAA Glu	GAA Glu	GTG Val	GCC Ala 260	CAG Gln	AGC Ser	TTT Phe	ACT Thr	CCC Pro 265	GGC Gly	TCC Ser	CAC His	GGC Gly	TCT Ser 270	ACC Thr	TTC Phe	816			
GGA Gly	GGA Gly	AAC Asn 275	CCC Pro	TTA Leu	GCC Ala	TGC Cys	AGG Arg 280	GCG Ala	GGA Gly	ACA Thr	GTG Val	GTA Val 285	GTA Val	GAT Asp	GAA Glu	864			
GTT Val	GAA Glu 290	AAA Lys	CTC Leu	CTG Leu	CCT Pro	CAC His 295	GTA Val	AGG Arg	GAA Glu	GTG Val	GGG Gly 300	AAT Asn	TAC Tyr	TTC Phe	AAA Lys	912			
GAA Glu 305	AAA Lys	CTG Leu	AAG Lys	GAA Glu	CTC Leu 310	GGC Gly	AAA Lys	GGA Gly	AAG Lys	GTA Val 315	AAG Lys	GGA Gly	AGA Arg	GGA Gly	TTG Leu 320	960			
ATG Met	CTC Leu	GGT Gly	CTT Leu 325	GAA Glu 325	CTT Leu	GAA Glu	AGA Arg	GAG Glu	TGT Cys 330	AAA Lys	GAT Asp	TAC Tyr	GTT Val 335	CTC Leu 335	AAG Lys	1008			
GCT Ala	CTT Leu	GAA Glu	AGG Arg 340	GAC Asp	TTC Phe	TCA Ser	TAA End									1032			

FIGURE 9

ATG	CGG	AAA	CTG	GCC	GAG	CGG	GCG	CAG	AAA	CTG	AGC	CCC	TCT	CCC	ACC	48
Met	Arg	Lys	Leu	Ala	Glu	Arg	Ala	Gln	Lys	Leu	Ser	Pro	Ser	Pro	Thr	
				5					10					15		
CTC	TCG	GTG	GAC	ACC	AAG	GCC	AAG	GAG	CTT	TTG	CGG	CAG	GGG	GAA	AGG	96
Leu	Ser	Val	Asp	Thr	Lys	Ala	Lys	Glu	Leu	Leu	Arg	Gln	Gly	Glu	Arg	
			20					25					30			
GTC	ATC	AAT	TTC	GGG	GCG	GGG	GAG	CCG	GAC	TTC	GAT	ACA	CCG	GAA	CAC	144
Val	Ile	Asn	Phe	Gly	Ala	Gly	Glu	Pro	Asp	Phe	Asp	Thr	Pro	Glu	His	
		35					40					45				
ATC	AAG	GAA	GCG	GCG	AAG	CGA	GCT	TTA	GAT	CAG	GGC	TTC	ACC	AAG	TAC	192
Ile	Lys	Glu	Ala	Ala	Lys	Arg	Ala	Leu	Asp	Gln	Gly	Phe	Thr	Lys	Tyr	
	50					55					60					
ACG	CCG	GTG	GCT	GGG	ATC	TTA	CCT	CTT	CGG	GAG	GCC	ATA	TGC	GAG	AAG	240
Thr	Pro	Val	Ala	Gly	Ile	Leu	Pro	Leu	Arg	Glu	Ala	Ile	Cys	Glu	Lys	
	65				70					75				80		
CTT	TAC	CGC	GAC	AAT	CAA	CTG	GAA	TAC	AGC	CCG	AAT	GAG	ATC	GTG	GTC	288
Leu	Tyr	Arg	Asp	Asn	Gln	Leu	Glu	Tyr	Ser	Pro	Asn	Glu	Ile	Val	Val	
				85					90					95		
TCC	TGT	GGC	GCC	AAG	CAT	TCT	ATT	TTC	AAC	GCT	CTG	CAG	GTC	CTC	CTG	336
Ser	Cys	Gly	Ala	Lys	His	Ser	Ile	Phe	Asn	Ala	Leu	Gln	Val	Leu	Leu	
			100					105					110			
GAC	CCG	GGG	GAC	GAG	GTG	ATA	ATC	CCC	GTC	CCC	TAC	TGG	ACT	TCC	TAT	384
Asp	Pro	Gly	Asp	Glu	Val	Ile	Ile	Pro	Val	Pro	Tyr	Trp	Thr	Ser	Tyr	
		115					120					125				
CCG	GAG	CAG	GTG	AAG	CTG	GCG	GGA	GGG	GTG	CCG	GTT	TTC	GTC	CCC	ACC	432
Pro	Glu	Gln	Val	Lys	Leu	Ala	Gly	Gly	Val	Pro	Val	Phe	Val	Pro	Thr	
	130					135					140					
TCT	CCC	GAG	AAC	GAC	TTC	AAG	CTC	AGG	CCG	GAA	GAT	CTA	CGT	GCG	GCT	480
Ser	Pro	Glu	Asn	Asp	Phe	Lys	Leu	Arg	Pro	Glu	Asp	Leu	Arg	Ala	Ala	
	145				150					155				160		
GTA	ACC	CCG	CGC	ACC	CGC	CTT	TTG	ATC	CTC	AAT	TCC	CCG	GCC	AAC	CCC	528
Val	Thr	Pro	Arg	Thr	Arg	Leu	Leu	Ile	Leu	Asn	Ser	Pro	Ala	Asn	Pro	
				165					170					175		
ACA	GGC	ACC	GTT	TAC	CGC	CGG	GAG	GAA	CTT	ATC	GGC	TTA	GCG	GAG	GTA	576
Thr	Gly	Thr	Val	Tyr	Arg	Arg	Glu	Glu	Leu	Ile	Gly	Leu	Ala	Glu	Val	
			180					185					190			
GCC	CTG	GAG	GCC	GAC	CTA	TGG	ATC	TTG	TCG	GAC	GAG	ATC	TAC	GAA	AAG	624
Ala	Leu	Glu	Ala	Asp	Leu	Trp	Ile	Leu	Ser	Asp	Glu	Ile	Tyr	Glu	Lys	
		195					200					205				
CTG	ATC	TAC	GAC	GGG	ATG	GAG	CAC	GTG	AGC	ATA	GCC	GCG	CTC	GAC	CCG	672
Leu	Ile	Tyr	Asp	Gly	Met	Glu	His	Val	Ser	Ile	Ala	Ala	Leu	Asp	Pro	
	210					215					220					
GAG	GTC	AAA	AAG	CGC	ACG	ATT	GTG	GTA	AAC	GGT	GTT	TCC	AAG	GCT	TAC	720
Glu	Val	Lys	Lys	Arg	Thr	Ile	Val	Val	Asn	Gly	Val	Ser	Lys	Ala	Tyr	
	225				230					235				240		
GCC	ATG	ACC	GGT	TGG	CGC	ATA	GGT	TAT	GCT	GCC	GCT	CCC	CGG	CCG	ATA	768
Ala	Met	Thr	Gly	Trp	Arg	Ile	Gly	Tyr	Ala	Ala	Ala	Pro	Arg	Pro	Ile	
				245					250					255		

GCC CAG GCC ATG ACC AAC CTC CAA AGC CAC AGT ACC TCT AAC CCC ACT	816
Ala Gln Ala Met Thr Asn Leu Gln Ser His Ser Thr Ser Asn Pro Thr	
260 265 270	
TCC GTA GCC CAG GCG GCG GCG CTG GCC GCT CTG AAG GGG CCA CAA GAG	864
Ser Val Ala Gln Ala Ala Ala Leu Ala Ala Leu Lys Gly Pro Gln Glu	
275 280 285	
CCG GTG GAG AAC ATG CGC CGG GCT TTT CAA AAG CGG CGG GAT TTC ATC	912
Pro Val Glu Asn Met Arg Arg Ala Phe Gln Lys Arg Arg Asp Phe Ile	
290 295 300	
TGG CAG TAC CTA AAC TCC TTA CCC GGA GTG CGC TGC CCC AAA CCT TTA	960
Trp Gln Tyr Leu Asn Ser Leu Pro Gly Val Arg Cys Pro Lys Pro Leu	
305 310 315 320	
GGG GCC TTT TAC GTC TTT CCA GAA GTT GAG CGG GCT TTT GGG CCG CCG	1008
Gly Ala Phe Tyr Val Phe Pro Glu Val Glu Arg Ala Phe Gly Pro Pro	
325 330 335	
TCT AAA AGG ACG GGA AAT ACT ACC GCT AGC GAC CTG GCC CTT TTC CTC	1056
Ser Lys Arg Thr Gly Asn Thr Thr Ala Ser Asp Leu Ala Leu Phe Leu	
340 345 350	
CTG GAA GAG ATA AAA GTG GCC ACC GTG GCT GGG GCT GCC TTT GGG GAC	1104
Leu Glu Glu Ile Lys Val Ala Thr Val Ala Gly Ala Ala Phe Gly Asp	
355 360 365	
GAT CGC TAC CTG CGC TTT TCC TAC GCC CTG CGG CTG GAA GAT ATC GAA	1152
Asp Arg Tyr Leu Arg Phe Ser Tyr Ala Leu Arg Leu Glu Asp Ile Glu	
370 375 380	
GAG GGG ATG CAA CGG TTT AAA GAA TTG ATC GAA GCG GCA CTT TAA	1197
Glu Gly Met Gln Arg Phe Lys Glu Leu Ile Glu Ala Ala Leu End	
385 390 395	

FIGURE 10

ATG TGC GGG ATA GTC GGA TAC GTA GGG AGG GAT TTA GCC CTT CCT ATA	48
Met Cys Gly Ile Val Gly Tyr Val Gly Arg Asp Leu Ala Leu Pro Ile	
5 10 15	
GTC CTC GGA GCT CTT GAG AGA CTC GAA TAC AGG GGT TAC GAC TCC GCG	96
Val Leu Gly Ala Leu Glu Arg Leu Glu Tyr Arg Gly Tyr Asp Ser Ala	
20 25 30	
GGA GTT GCC CTT ATA GAA GAC GGG AAA CTC ATA GTT GAA AAG AAG AAG	144
Gly Val Ala Leu Ile Glu Asp Gly Lys Leu Ile Val Glu Lys Lys Lys	
35 40 45	
GGA AAG ATA AGG GAA CTC GTT AAA GCG CTA TGG GGA AAG GAT TAC AAG	192
Gly Lys Ile Arg Glu Leu Val Lys Ala Leu Trp Gly Lys Asp Tyr Lys	
50 55 60	
GCT AAA ACG GGT ATA GGT CAC ACA CGC TGG GCA ACC CAC GGA AAG CCC	240
Ala Lys Thr Gly Ile Gly His Thr Arg Trp Ala Thr His Gly Lys Pro	
65 70 75 80	
ACG GAC GAG AAC GCC CAC CCC CAC ACC GAC GAA AAA GGT GAG TTT GCA	288
Thr Asp Glu Asn Ala His Pro His Thr Asp Glu Lys Gly Glu Phe Ala	
85 90 95	
GTA GTT CAC AAC GGG ATA ATA GAA AAC TAC TTA GAA CTA AAA GAG GAA	336
Val Val His Asn Gly Ile Ile Glu Asn Tyr Leu Glu Leu Lys Glu Glu	
100 105 110	
CTA AAG AAG GAA GGT GTA AAG TTC AGG TCC GAA ACA GAC ACA GAA GTT	384
Leu Lys Lys Glu Gly Val Lys Phe Arg Ser Glu Thr Asp Thr Glu Val	
115 120 125	
ATA GCC CAC CTC ATA GCG AAG AAC TAC AGG GGG GAC TTA CTG GAG GCC	432
Ile Ala His Leu Ile Ala Lys Asn Tyr Arg Gly Asp Leu Leu Glu Ala	
130 135 140	
GTT TTA AAA ACC GTA AAG AAA TTA AAG GGT GCT TTT GCC TTT GCG GTT	480
Val Leu Lys Thr Val Lys Lys Leu Lys Gly Ala Phe Ala Phe Ala Val	
145 150 155 160	
ATA ACG GTT CAC GAA CCA AAC AGA CTA ATA GGA GTG AAG CAG GGG AGT	528
Ile Thr Val His Glu Pro Asn Arg Leu Ile Gly Val Lys Gln Gly Ser	
165 170 175	
CCT TTA ATC GTC GGA CTC GGA GAA GGA GAA AAC TTC CTC GCT TCA GAT	576
Pro Leu Ile Val Gly Leu Gly Glu Gly Glu Asn Phe Leu Ala Ser Asp	
180 185 190	
ATT CCC GCA ATA CTT CCT TAC ACG AAA AAG ATT ATT GTT CTT GAT GAC	624
Ile Pro Ala Ile Leu Pro Tyr Thr Lys Lys Ile Ile Val Leu Asp Asp	
195 200 205	
GGG GAA ATA GCG GAC CTG ACT CCC GAC ACT GTG AAC ATT TAC AAC TTT	672
Gly Glu Ile Ala Asp Leu Thr Pro Asp Thr Val Asn Ile Tyr Asn Phe	
210 215 220	
GAG GGA GAG CCC GTT TCA AAG GAA GTA ATG ATT ACG CCC TGG GAT CTT	720
Glu Gly Glu Pro Val Ser Lys Glu Val Met Ile Thr Pro Trp Asp Leu	
225 230 235 240	
GTT TCT GCG GAA AAG GGT GGT TTT AAA CAC TTC ATG CTA AAA GAG ATA	768
Val Ser Ala Glu Lys Gly Gly Phe Lys His Phe Met Leu Lys Glu Ile	
245 250 255	

TAC Tyr	GAA Glu	CAG Gln	CCC Pro 260	AAA Lys	GCC Ala	ATA Ile	AAC Asn	GAC Asp 265	ACA Thr	CTC Leu	AAG Lys	GGT Gly	TTC Phe 270	CTC Leu	TCA Ser	816
ACC Thr	GAA Glu	GAC Asp 275	GCA Ala	ATA Ile	CCC Pro	TTT Phe	AAG Lys 280	TTA Leu	AAA Lys	GAC Asp	TTC Phe	AGA Arg 285	AGG Arg	GTT Val	TTA Leu	864
ATA Ile 290	ATA Ile	GCG Ala	TGC Cys	GGG Gly	ACC Thr	TCT Ser 295	TAC Tyr	CAC His	GCG Ala	GGC Gly	TTC Phe 300	GTC Val	GGA Gly	AAG Lys	TAC Tyr	912
TGG Trp 305	ATA Ile	GAG Glu	AGA Arg	TTT Phe	GCA Ala 310	GGT Gly	GTT Val	CCC Pro	ACA Thr	GAG Glu 315	GTA Val	ATT Ile	TAC Tyr	GCT Ala	TCG Ser 320	960
GAA Glu	TTC Phe	AGG Arg	TAT Tyr 325	GCG Ala	GAC Asp	GTT Val	CCC Pro	GTT Val	TCG Ser 330	GAC Asp	AAG Lys	GAT Asp	ATC Ile	GTT Val 335	ATC Ile	1008
GGA Gly	ATT Ile	TCC Ser	CAG Gln 340	TCA Ser	GGA Gly	GAG Glu	ACC Thr	GCT Ala 345	GAC Asp	ACA Thr	AAG Lys	TTT Phe	GCC Ala 350	CTT Leu	CAG Gln	1056
TCC Ser	GCA Ala	AAG Lys 355	GAA Glu	AAG Lys	GGA Gly	GCC Ala	TTT Phe 360	ACC Thr	GTG Val	GGA Gly	CTC Leu	GTA Val 365	AAC Asn	GTA Val	GTG Val	1104
GGA Gly 370	AGT Ser	GCC Ala	ATA Ile	GAC Asp	AGG Arg	GAG Glu 375	TCG Ser	GAC Asp	TTT Phe	TCC Ser	CTT Leu 380	CAC His	ACA Thr	CAT His	GCG Ala	1152
GGA Gly 385	CCC Pro	GAA Glu	ATA Ile	GGC Gly	GTG Val 390	GCG Ala	GCT Ala	ACA Thr	AAG Lys	ACC Thr 395	TTC Phe	ACC Thr	GCA Ala	CAG Gln	TTC Phe 400	1200
ACC Thr	GCA Ala	CTC Leu	TAC Tyr 405	GCC Ala	CTT Leu	TCG Ser	GTA Val	AGG Arg	GAA Glu 410	AGT Ser	GAG Glu	GAG Glu	AGG Arg	GAA Glu 415	AAT Asn	1248
CTA Leu	ATA Ile	AGA Arg	CTC Leu 420	CTT Leu	GAA Glu	AAG Lys	GTT Val	CCA Pro 425	TCA Ser	CTC Leu	GTT Val	GAA Glu	CAA Gln 430	ACA Thr	CTG Leu	1296
AAC Asn	ACC Thr	GCA Ala 435	GAA Glu	GAA Glu	GTG Val	GAG Glu 440	AAG Lys	GTA Val	GCG Ala	GAA Glu	AAG Lys	TAC Tyr 445	ATG Met	AAA Lys	AAG Lys	1344
AAA Lys 450	AAC Asn	ATG Met	CTT Leu	TAC Tyr	CTC Leu	GGA Gly 455	AGG Arg	TAC Tyr	TTA Leu	AAT Asn	TAC Tyr 460	CCC Pro	ATA Ile	GCG Ala	CTG Leu	1392
GAG Glu 465	GGA Gly	GCT Ala	CTT Leu	AAA Lys	CTT Leu 470	AAA Lys	GAA Glu	ATT Ile	TCT Ser	TAC Tyr 475	ATA Ile	CAC His	GCG Ala	GAA Glu	GGT Gly 480	1440
TAT Tyr	CCC Pro	GCA Ala	GGG Gly	GAG Glu	ATG Met	AAG Lys	CAC His	GGT Gly	CCC Pro 490	ATA Ile	GCC Ala	CTC Leu	ATA Ile	GAC Asp 495	GAA Glu	1488
AAC Asn	ATG Met	CCG Pro	GTT Val 500	GTG Val	GTA Val	ATC Ile	GCA Ala	CCG Pro 505	AAA Lys	GAC Asp	AGG Arg	GTT Val	TAC Tyr 510	GAG Glu	AAG Lys	1536
ATA	CTC	TCA	AAC	GTA	GAA	GAG	GTT	CTC	GCA	AGA	AAG	GGA	AGG	GTT	ATT	1584

Ile	Leu	Ser	Asn	Val	Glu	Glu	Val	Leu	Ala	Arg	Lys	Gly	Arg	Val	Ile		
		515					520					525					
TCT	GTA	GGC	TTT	AAA	GGA	GAC	GAA	ACT	CTC	AAA	AGC	AAA	TCC	GAG	AGC		1632
Ser	Val	Gly	Phe	Lys	Gly	Asp	Glu	Thr	Leu	Lys	Ser	Lys	Ser	Glu	Ser		
		530				535					540						
GTT	ATG	GAA	ATC	CCG	AAG	GCA	GAA	GAA	CCG	ATA	ACT	CCT	TTC	TTG	ACG		1680
Val	Met	Glu	Ile	Pro	Lys	Ala	Glu	Glu	Pro	Ile	Thr	Pro	Phe	Leu	Thr		
		545			550					555					560		
GTA	ATA	CCC	CTG	CAA	CTC	TTT	GCC	TAC	TTT	ATA	GCG	AGC	AAA	CTG	GGA		1728
Val	Ile	Pro	Leu	Gln	Leu	Phe	Ala	Tyr	Phe	Ile	Ala	Ser	Lys	Leu	Gly		
				565					570					575		580	
CTG	GAT	GTG	GAT	CAG	CCG	AGA	AAT	CTC	GCC	AAA	ACG	GTC	ACG	GTG	GAA		1776
Leu	Asp	Val	Asp	Gln	Pro	Arg	Asn	Leu	Ala	Lys	Thr	Val	Thr	Val	Glu		
			580					585						590			
TAA																	1779
End																	

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100

FIGURE 11

ATG	ATA	CCC	CAG	AGG	ATT	AAG	GAA	CTT	GAA	GCT	TAC	AAG	ACG	GAG	GTC	48
Met	Ile	Pro	Gln	Arg	Ile	Lys	Glu	Leu	Glu	Ala	Tyr	Lys	Thr	Glu	Val	
			5				10							15		
ACT	CCC	GCC	TCC	GTC	AGG	CTT	TCC	TCT	AAC	GAA	TTC	CCC	TAC	GAC	TTT	96
Thr	Pro	Ala	Ser	Val	Arg	Leu	Ser	Ser	Asn	Glu	Phe	Pro	Tyr	Asp	Phe	
			20				25						30			
CCC	GAG	GAG	ATA	AAA	CAA	AGG	GCC	TTA	GAA	GAA	TTA	AAA	AAG	GTT	CCC	144
Pro	Glu	Glu	Ile	Lys	Gln	Arg	Ala	Leu	Glu	Glu	Leu	Lys	Lys	Val	Pro	
		35					40					45				
TTG	AAC	AAA	TAC	CCA	GAC	CCC	GAA	GCG	AAA	GAG	TTA	AAA	GCG	GTT	CTT	192
Leu	Asn	Lys	Tyr	Pro	Asp	Pro	Glu	Ala	Lys	Glu	Leu	Lys	Ala	Val	Leu	
	50					55					60					
GCG	GAT	TTT	TTC	GGC	GTT	AAG	GAA	GAA	AAT	TTA	GTT	CTC	GGT	AAC	GGT	240
Ala	Asp	Phe	Phe	Gly	Val	Lys	Glu	Glu	Asn	Leu	Val	Leu	Gly	Asn	Gly	
65					70				75						80	
TCG	GAC	GAA	CTC	ATA	TAC	TAC	CTC	TCA	ATA	GCT	ATA	GGT	GAA	CTT	TAC	288
Ser	Asp	Glu	Leu	Ile	Tyr	Tyr	Leu	Ser	Ile	Ala	Ile	Gly	Glu	Leu	Tyr	
				85					90					95		
ATA	CCC	GTT	TAC	ATA	CCT	GTT	CCC	ACC	TTT	CCC	ATG	TAC	GAG	ATA	AGT	336
Ile	Pro	Val	Tyr	Ile	Pro	Val	Pro	Thr	Phe	Pro	Met	Tyr	Glu	Ile	Ser	
			100					105					110			
GCG	AAA	GTT	CTC	GGA	AGA	CCC	CTC	GTA	AAG	GTT	CAA	CTG	GAC	GAA	AAC	384
Ala	Lys	Val	Leu	Gly	Arg	Pro	Leu	Val	Lys	Val	Gln	Leu	Asp	Glu	Asn	
		115					120					125				
TTT	GAT	ATA	GAC	TTA	GAA	AGA	AGT	ATT	GAA	TTA	ATA	GAG	AAA	GAA	AAA	432
Phe	Asp	Ile	Asp	Leu	Glu	Arg	Ser	Ile	Glu	Leu	Ile	Glu	Lys	Glu	Lys	
	130					135					140					
CCC	GTT	CTC	GGG	TAC	TTT	GCT	TAC	CCA	AAC	AAC	CCC	ACG	GGA	AAC	CTC	480
Pro	Val	Leu	Gly	Tyr	Phe	Ala	Tyr	Pro	Asn	Asn	Pro	Thr	Gly	Asn	Leu	
145					150				155						160	
TTT	TCC	AGG	GGA	AAG	ATT	GAG	GAG	ATA	AGA	AAC	AGG	GGT	GTT	TTC	TGT	528
Phe	Ser	Arg	Gly	Lys	Ile	Glu	Glu	Ile	Arg	Asn	Arg	Gly	Val	Phe	Cys	
				165					170					175		
GTA	ATA	GAC	GAA	GCC	TAC	TAT	CAT	TAC	TCC	GGA	GAA	ACC	TTT	CTG	GAA	576
Val	Ile	Asp	Glu	Ala	Tyr	Tyr	His	Tyr	Ser	Gly	Glu	Thr	Phe	Leu	Glu	
			180					185						190		
GAC	GCG	CTC	AAA	AGG	GAA	GAT	ACG	GTA	GTT	TTG	AGG	ACA	CTT	TCA	AAA	624
Asp	Ala	Leu	Lys	Arg	Glu	Asp	Thr	Val	Val	Leu	Arg	Thr	Leu	Ser	Lys	
		195					200					205				
ATC	GGT	ATG	GCG	AGT	TTA	AGG	GTA	GGG	ATT	TTA	ATA	GGG	AAG	GGG	GAA	672
Ile	Gly	Met	Ala	Ser	Leu	Arg	Val	Gly	Ile	Leu	Ile	Gly	Lys	Gly	Glu	
	210					215					220					
ATC	GTC	TCA	GAA	ATT	AAC	AAG	GTG	AGA	CTC	CCC	TTC	AAC	GTG	ACC	TAC	720
Ile	Val	Ser	Glu	Ile	Asn	Lys	Val	Arg	Leu	Pro	Phe	Asn	Val	Thr	Tyr	
225					230					235					240	
CCC	TCT	CAG	GTG	ATG	GCA	AAA	GTT	CTC	CTC	ACG	GAG	GGA	AGA	GAA	TTC	768
Pro	Ser	Gln	Val	Met	Ala	Lys	Val	Leu	Leu	Thr	Glu	Gly	Arg	Glu	Phe	
				245					250					255		

CTA ATG GAA AAG ATA CAG GAG GTT GTA ACA GAG CGA GAA AGG ATG TAC	816
Leu Met Glu Lys Ile Gln Glu Val Val Thr Glu Arg Glu Arg Met Tyr	
260 265 270	
GAC GAA ATG AAG AAA ATA GAA GGA GTT GAG GTT TTT CCG AGT AAG GCT	864
Asp Glu Met Lys Lys Ile Glu Gly Val Glu Val Phe Pro Ser Lys Ala	
275 280 285	
AAC TTC TTG CTT TTC AGA ACG CCT TAC CCC GCC CAC GAG GTT TAT CAG	912
Asn Phe Leu Leu Phe Arg Thr Pro Tyr Pro Ala His Glu Val Tyr Gln	
290 295 300	
GAG CTA CTG AAA AGG GAT GTC CTC GTC AGG AAC GTA TCT TAC ATG GAA	960
Glu Leu Leu Lys Arg Asp Val Leu Val Arg Asn Val Ser Tyr Met Glu	
305 310 315 320	
GGA CTC CAA AAG TGC CTC AGG GTA AGC GTA GGG AAA CCG GAA GAA AAC	1008
Gly Leu Gln Lys Cys Leu Arg Val Ser Val Gly Lys Pro Glu Glu Asn	
325 330 335	
AAC AAG TTT CTG GAA GCA CTG GAG GAG AGT ATA AAA TCC CTT TCA AGC	1056
Asn Lys Phe Leu Glu Ala Leu Glu Glu Ser Ile Lys Ser Leu Ser Ser	
340 345 350	
TCT CTT TAA	1065
Ser Leu End	

FIGURE 12

ATG AAG CCG TAC GCT AAA TAT ATC TGG CTT GAC GGC AGA ATA CTT AAG	48
Met Lys Pro Tyr Ala Lys Tyr Ile Trp Leu Asp Gly Arg Ile Leu Lys	
5 10 15	
TGG GAA GAC GCG AAA ATA CAC GTG TTG ACT CAC GCG CTT CAC TAC GGA	96
Trp Glu Asp Ala Lys Ile His Val Leu Thr His Ala Leu His Tyr Gly	
20 25 30	
ACC TCT ATA TTC GAG GGA ATA AGA GGG TAT TGG AAC GGC GAT AAT TTG	144
Thr Ser Ile Phe Glu Gly Ile Arg Gly Tyr Trp Asn Gly Asp Asn Leu	
35 40 45	
CTC GTC TTT AGG TTA GAA GAA CAC ATC GAC CGC ATG TAC AGA TCG GCT	192
Leu Val Phe Arg Leu Glu Glu His Ile Asp Arg Met Tyr Arg Ser Ala	
50 55 60	
AAG ATA CTA GGC ATA AAT ATT CCG TAT ACA AGA GAG GAA GTC CGC CAA	240
Lys Ile Leu Gly Ile Asn Ile Pro Tyr Thr Arg Glu Glu Val Arg Gln	
65 70 75 80	
GCT GTA CTA GAG ACC ATA AAG GCT AAT AAC TTC CGA GAG GAT GTC TAC	288
Ala Val Leu Glu Thr Ile Lys Ala Asn Asn Phe Arg Glu Asp Val Tyr	
85 90 95	
ATA AGA CCT GTG GCG TTT GTC GCC TCG CAG ACG GTG ACG CTT GAC ATA	336
Ile Arg Pro Val Ala Phe Val Ala Ser Gln Thr Val Thr Leu Asp Ile	
100 105 110	
AGA AAT TTG GAA GTC TCC CTC GCG GTT ATT GTA TTC CCA TTT GGC AAA	384
Arg Asn Leu Glu Val Ser Leu Ala Val Ile Val Phe Pro Phe Gly Lys	
115 120 125	
TAC CTC TCG CCC AAC GGC ATT AAG GCA ACG ATT GTA AGC TGG CGT AGA	432
Tyr Leu Ser Pro Asn Gly Ile Lys Ala Thr Ile Val Ser Trp Arg Arg	
130 135 140	
GTA CAT AAT ACA ATG CTC CCT GTG ATG GCA AAA ATC GGC GGT ATA TAT	480
Val His Asn Thr Met Leu Pro Val Met Ala Lys Ile Gly Gly Ile Tyr	
145 150 155 160	
GTA AAC TCT GTA CTT GCG CTT GTA GAG GCT AGA AGC AGG GGA TTT GAC	528
Val Asn Ser Val Leu Ala Leu Val Glu Ala Arg Ser Arg Gly Phe Asp	
165 170 175	
GAG GCT TTA TTA ATG GAC GTT AAC GGT TAT GTT GTT GAG GGT TCT GGA	576
Glu Ala Leu Leu Met Asp Val Asn Gly Tyr Val Val Glu Gly Ser Gly	
180 185 190	
GAG AAT ATT TTC ATT GTC AGA GGT GGA AGG CTT TTC ACG CCG CCA GTA	624
Glu Asn Ile Phe Ile Val Arg Gly Gly Arg Leu Phe Thr Pro Pro Val	
195 200 205	
CAC GAA TCT ATC CTC GAG GGA ATT ACG AGG GAT ACG GTA ATA AAG CTC	672
His Glu Ser Ile Leu Glu Gly Ile Thr Arg Asp Thr Val Ile Lys Leu	
210 215 220	
AGC GGG GAT GTG GGA CTT CGG GTG GAG GAA AAG CCT ATT ACG AGG GAG	720
Ser Gly Asp Val Gly Leu Arg Val Glu Glu Lys Pro Ile Thr Arg Glu	
225 230 235 240	

GAG GTG TAT ACA GCC GAC GAG GTG TTT TTA GTA GGA ACC GCC GCA GAG	768
Glu Val Tyr Thr Ala Asp Glu Val Phe Leu Val Gly Thr Ala Ala Glu	
245 250 255	
ATA ACG CCA GTG GTG GAG GTT GAC GGC AGA ACA ATC GGC ACA GGC AAG	816
Ile Thr Pro Val Val Glu Val Asp Gly Arg Thr Ile Gly Thr Gly Lys	
260 265 270	
CCG GGC CCC ATT ACG ACA AAA ATA GCT GAG CTG TAC TCA AAC GTC GTG	864
Pro Gly Pro Ile Thr Thr Lys Ile Ala Glu Leu Tyr Ser Asn Val Val	
275 280 285	
AGA GGC AAA GTA GAG AAA TAC TTA AAT TGG ATC ACT CCT GTG TAT TAG	912
Arg Gly Lys Val Glu Lys Tyr Leu Asn Trp Ile Thr Pro Val Tyr End	
290 295 300	

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100

FIGURE 13

Ammonifex degensii histidinol phosphate aminotransferase

1 ATG GCA GTC AAA GTG CGG CCT GAG CTC AGC CAG GTG GAG ATC TAC CGT CCC GGC AAA CCC 60
 1 Met Ala Val Lys Val Arg Pro Glu Leu Ser Gln Val Glu Ile Tyr Arg Pro Gly Lys Pro 20

 61 ATC GAA GAG GTA AAG AAG GAG CTG GGG CTG GAG GAG GTA GTC AAG CTG GCC TCC AAC GAG 120
 21 Ile Glu Glu Val Lys Lys Glu Leu Gly Leu Glu Glu Val Val Lys Leu Ala Ser Asn Glu 40

 121 AAC CCT CTG GGA CCT TCT CCC AAG GCC GTG GCG GCG CTG GAG GGA CTG GAC CAC TGG CAC 180
 41 Asn Pro Leu Gly Pro Ser Pro Lys Ala Val Ala Ala Leu Glu Gly Leu Asp His Trp His 60

 181 CTT TAC CCA GAA GGC TCA AGC TAT GAG CTA CGG CAG GCG CTG GGT AAG AAA CTG GAG ATA 240
 61 Leu Tyr Pro Glu Gly Ser Ser Tyr Glu Leu Arg Gln Ala Leu Gly Lys Lys Leu Glu Ile 80

 241 GAC CCG GAC AGC ATC ATC GTG GGT TGC GGC TCA AGC GAA GTC ATC CAG ATG CTC TCT TTG 300
 81 Asp Pro Asp Ser Ile Ile Val Gly Cys Gly Ser Ser Glu Val Ile Gln Met Leu Ser Leu 100

 301 GCC CTG CTG GCG CCC GGC GAC GAG GTG GTC ATC CCT GTG CCT ACC TTT CCC CGC TAT GAG 360
 101 Ala Leu Leu Ala Pro Gly Asp Glu Val Val Ile Pro Val Pro Thr Phe Pro Arg Tyr Glu 120

 361 CCC CTG GCA CGG CTC ATG GGG GCT AAT CCC GTA AAA GTT CCC TTG AAG GAC TAC CGC ATC 420
 121 Pro Leu Ala Arg Leu Met Gly Ala Asn Pro Val Lys Val Pro Leu Lys Asp Tyr Arg Ile 140

 421 GAT GTG GAG GCA GTG GCC CGA GCC CTT TCC CCC CGT ACC AAG CTG GTC TAC CTA TGC AAC 480
 141 Asp Val Glu Ala Val Ala Arg Ala Leu Ser Pro Arg Thr Lys Leu Val Tyr Leu Cys Asn 160

 481 CCC AAC AAC CCC ACC GGG ACC ATC GTC ACC CGG GAG GAG GTG GAG TGG TTC TTG GAA AAG 540
 161 Pro Asn Asn Pro Thr Gly Thr Ile Val Thr Arg Glu Glu Val Glu Trp Phe Leu Glu Lys 180

 541 GCG GGG GAG GGG GTT CTC ACC GTG CTG GAC GAG GCC TAC TGC GAG TAC GTG ACC AGC CCC 600
 181 Ala Gly Glu Gly Val Leu Thr Val Leu Asp Glu Ala Tyr Cys Glu Tyr Val Thr Ser Pro 200

 601 GCC TAC CCT GAT GGG CTC GAT TTC CTG CGC CGG GGC TAC AAT GTG GTG GTG CTG CGC ACC 660
 201 Ala Tyr Pro Asp Gly Leu Asp Phe Leu Arg Arg Gly Tyr Asn Val Val Val Leu Arg Thr 220

 661 TTC TCC AAG ATC TAC GGG CTG GCC GGG CTG CGC ATA GGG TAC GGT GTG GCG GAC AGG GAG 720
 221 Phe Ser Lys Ile Tyr Gly Leu Ala Gly Leu Arg Ile Gly Tyr Gly Val Ala Asp Arg Glu 240

 721 CTG GTG GCG GAA CTG CAC CGG GTG CGG GAG CCT TTC AAT GTC AGT TCC GCT GCT CAG ATA 780
 241 Leu Val Ala Glu Leu His Arg Val Arg Glu Pro Phe Asn Val Ser Ser Ala Ala Gln Ile 260

 781 GCC GCC CTG GCC GCC CTG GAA GAC GAA GAG TTC GTG GCG CTT TCG CGC CAG GTC AAC GAA 840
 261 Ala Ala Leu Ala Ala Leu Glu Asp Glu Glu Phe Val Ala Leu Ser Arg Gln Val Asn Glu 280

 841 GAA GGG AAG GTT TTT CTC TAC CGA GAA CTG GAG AGG CGG GGG ATC GCC TAC GTG CCC ACC 900
 281 Glu Gly Lys Val Phe Leu Tyr Arg Glu Leu Glu Arg Arg Gly Ile Ala Tyr Val Pro Thr 300

 901 GAG GCC AAC TTC CTA CTC TTC GAT GCC GGT CGG GAC GAG CAG GAA GTA TTT CGC CGG ATG 960
 301 Glu Ala Asn Phe Leu Leu Phe Asp Ala Gly Arg Asp Glu Gln Glu Val Phe Arg Arg Met 320

 961 CTG CGC CAG GGA GTG ATC ATC CGG GNC GGG GTG GGT TAT CCC ACC CAC TTA AGG GTG ACC 1020
 321 Leu Arg Gln Gly Val Ile Ile Arg Xxx Gly Val Gly Tyr Pro Thr His Leu Arg Val Thr 340

 1021 ATC GGC ACC TTG GAA CAG AAC CAG CGC TTC CTG GAA GCT TTG GAT AAG GCT CTA GAG CTT 1080
 341 Ile Gly Thr Leu Glu Gln Asn Gln Arg Phe Leu Glu Ala Leu Asp Lys Ala Leu Glu Leu 360

 1081 AGG GGG GTT TAA 1092
 361 Arg Gly Val End 364

FIGURE 14

Aquifex aspartate aminotransferase

1 ATG AGA AAA GGA CTT GCA AGT AGG GTA AGT CAC CTA AAA CCT TCC CCC ACG CTG ACC ATA 60
 Met Arg Lys Gly Leu Ala Ser Arg Val Ser His Leu Lys Pro Ser Pro Thr Leu Thr Ile
 61 ACC GCA AAA GCA AAA GAA TTA AGG GCT AAA GGA GTG GAC GTT ATA GGT TTT GGA GCG GGA 120
 Thr Ala Lys Ala Lys Glu Leu Arg Ala Lys Gly Val Asp Val Ile Gly Phe Gly Ala Gly
 121 GAA CCT GAC TTC GAC ACA CCC GAC TTC ATA AAG GAA GCC TGT ATA AGG GCT TTA AGG GAA 180
 Glu Pro Asp Phe Asp Thr Pro Asp Phe Ile Lys Glu Ala Cys Ile Arg Ala Leu Arg Glu
 181 GGA AAG ACC AAG TAC GCT CCC TCC GCG GGA ATA CCA GAG CTC AGA GAA GCT ATA GCT GAA 240
 Gly Lys Thr Lys Tyr Ala Pro Ser Ala Gly Ile Pro Glu Leu Arg Glu Ala Ile Ala Glu
 241 AAA CTA CTG AAA GAA AAC AAA GTT GAG TAC AAA CCT TCA GAG ATA GTC GTT TCC GCA GGA 300
 Lys Leu Leu Lys Glu Asn Lys Val Glu Tyr Lys Pro Ser Glu Ile Val Val Ser Ala Gly
 301 GCG AAA ATG GTT CTC TTC CTC ATA TTC ATG GCT ATA CTG GAC GAA GGA GAC GAG GTT TTA 360
 Ala Lys Met Val Leu Phe Leu Ile Phe Met Ala Ile Leu Asp Glu Gly Asp Glu Val Leu
 361 CTA CCT AGC CCT TAC TGG GTA ACT TAC CCC GAA CAG ATA AGG TTC TTC GGA GGG GTT CCC 420
 Leu Pro Ser Pro Tyr Trp Val Thr Tyr Pro Glu Gln Ile Arg Phe Phe Gly Gly Val Pro
 421 GTT GAG GTT CCT CTA AAG AAA GAG AAA GGA TTT CAA TTA AGT CTG GAA GAT GTG AAA GAA 480
 Val Glu Val Pro Leu Lys Lys Glu Lys Gly Phe Gln Leu Ser Leu Glu Asp Val Lys Glu
 481 AAG GTT ACG GAG AGA ACA AAA GCT ATA GTC ATA AAC TCT CCG AAC AAC CCC ACT GGT GCT 540
 Lys Val Thr Glu Arg Thr Lys Ala Ile Val Ile Asn Ser Pro Asn Asn Pro Thr Gly Ala
 541 GTT TAC GAA GAG GAG GAA CTT AAG AAA ATA GCG GAG TTT TGC GTG GAG AGG GGC ATT TTC 600
 Val Tyr Glu Glu Glu Glu Leu Lys Lys Ile Ala Glu Phe Cys Val Glu Arg Gly Ile Phe
 601 ATA ATT TCC GAT GAG TGC TAT GAG TAC TTC GTT TAC GGT GAT GCA AAA TTT GTT AGC CCT 660
 Ile Ile Ser Asp Glu Cys Tyr Glu Tyr Phe Val Tyr Gly Asp Ala Lys Phe Val Ser Pro
 661 GCC TCT TTC TCG GAT GAA GTA AAG AAC ATA ACC TTC ACG GTA AAC GCC TTT TCG AAG AGC 720
 Ala Ser Phe Ser Asp Glu Val Lys Asn Ile Thr Phe Thr Val Asn Ala Phe Ser Lys Ser
 721 TAT TCC ATG ACT GGT TGG CGA ATA GGT TAT GTA GCG TGC CCC GAA GAG TAC GCA AAA GTG 780
 Tyr Ser Met Thr Gly Trp Arg Ile Gly Tyr Val Ala Cys Pro Glu Glu Tyr Ala Lys Val
 781 ATA GCG AGT CTT AAC AGC CAG AGT GTT TCC AAC GTC ACT ACC TTT GCC CAG TAT GGA GCT 840
 Ile Ala Ser Leu Asn Ser Gln Ser Val Ser Asn Val Thr Thr Phe Ala Gln Tyr Gly Ala
 841 CTT GAG GCC TTG AAA AAT CCA AAG TCT AAA GAT TTT GTA AAC GAA ATG AGA AAT GCT TTT 900
 Leu Glu Ala Leu Lys Asn Pro Lys Ser Lys Asp Phe Val Asn Glu Met Arg Asn Ala Phe
 901 GAA AGG AGA AGG GAT ACG GCT GTA GAA GAG CTT TCT AAA ATT CCA GGT ATG GAT GTG GTA 960
 Glu Arg Arg Arg Asp Thr Ala Val Glu Glu Leu Ser Lys Ile Pro Gly Met Asp Val Val
 961 AAA CCC GAA GGT GCC TTT TAC ATA TTT CCG GAC TTC TCC GCT TAC GCT GAG AAA CTG GGT 1020
 Lys Pro Glu Gly Ala Phe Tyr Ile Phe Pro Asp Phe Ser Ala Tyr Ala Glu Lys Leu Gly
 1021 GGT GAT GTG AAA CTC TCG GAG TTC CTT CTG GAA AAG GCT AAG GTT GCG GTG GTT CCC GGT 1080
 Gly Asp Val Lys Leu Ser Glu Phe Leu Leu Glu Lys Ala Lys Val Ala Val Val Pro Gly
 1081 TCG GCC TTC GGA GCT CCC GGA TTT TTG AGG CTT TCT TAC GCC CTT TCC GAG GAA AGA CTC 1140
 Ser Ala Phe Gly Ala Pro Gly Phe Leu Arg Leu Ser Tyr Ala Leu Ser Glu Glu Arg Leu
 1141 GTT GAG GGT ATA AGG AGA ATA AAG AAA GCC CTT GAA GAG ATC TAA 1185
 Val Glu Gly Ile Arg Arg Ile Lys Lys Ala Leu Glu Glu Ile End

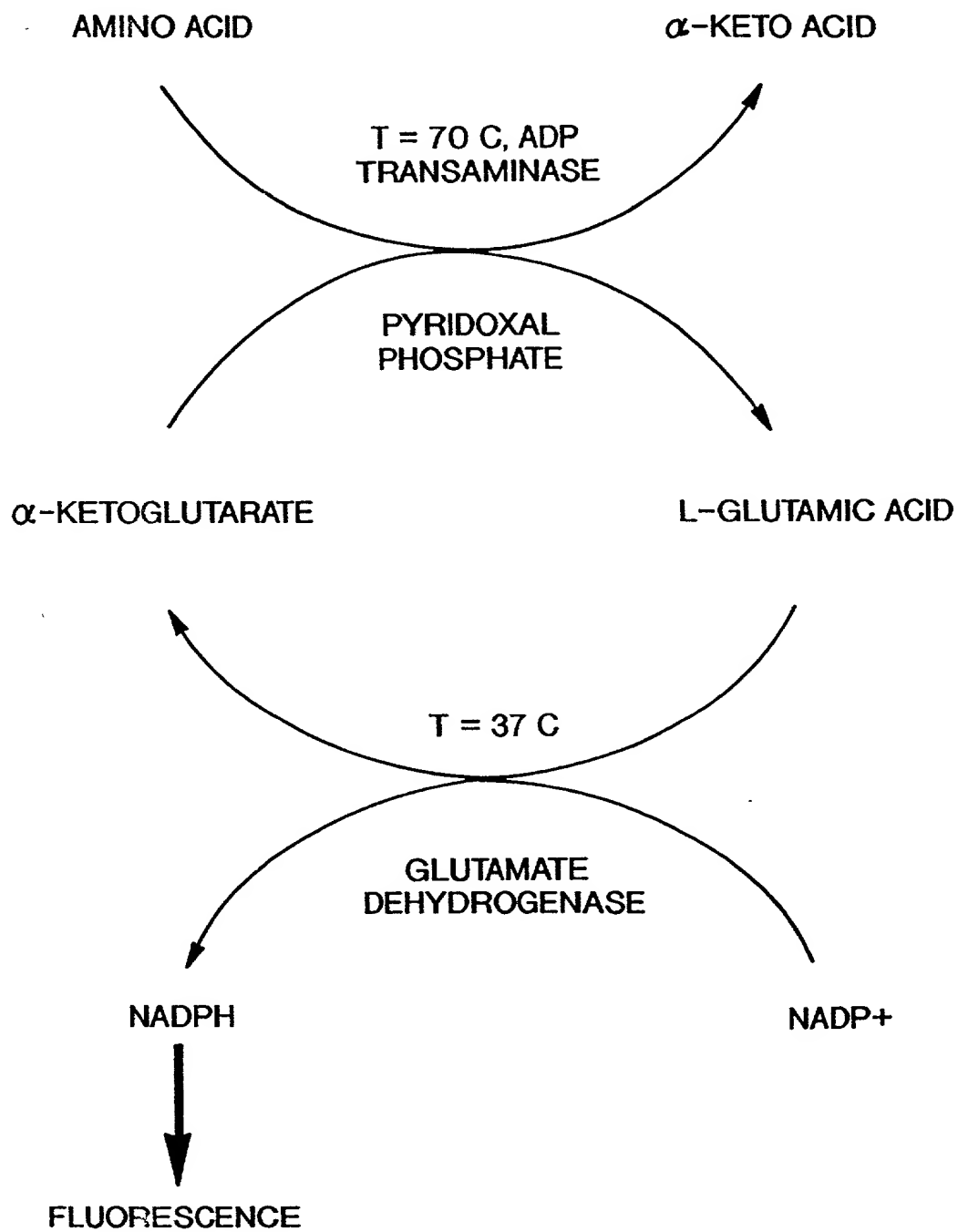


FIG. 15